National Space Policy Review

U.S. Space Transportation Policy

December 21, 2004

Agenda

- The Need for a Revised Policy
- Task / Process / Product
- Key Policy Changes

The Need for a Revised Policy

- Significant changes in technology, commercial markets and space programs over the last 10 years
- U.S. space transportation capabilities are the critical foundation upon which U.S. access to and use of space depends
- Renewed space exploration program
  - Retirement of the Space Shuttle
  - Develop a new Crew exploration vehicle
  - Return to the Moon by 2020
- Increased competition from foreign providers
- Need to refocus efforts for development of next-generation space transportation capabilities

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Task / Process / Product

- Task: June 2002 President George W. Bush initiates phased review of all national space policies

- Process: Draft Space Transportation Policy developed by interagency Space Policy Coordinating Committee (Space PCC)

- Product: Supercedes PDD/NSTC-4, *National Space Transportation Policy*, dated August 5, 1994

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Policy Structure

- Background
- Goals and Objectives
- Implementation Guidelines
  - Assuring Access to Space
  - Space Exploration
  - Transformation of Space Transportation Capabilities
  - Commercial Space Transportation
  - U.S. Space Transportation Industrial and Technology Base
  - Nonproliferation and Use of Excess Ballistic Missile Assets
- Implementing Actions

Goals and Objectives

- Ensure the availability of U.S. space transportation capabilities necessary to provide reliable and affordable space access
  - Including access to, transport through, and return from space
- Demonstrate an initial capability for operationally responsive access to and use of space to support national security requirements
- Develop space transportation capabilities to enable human space exploration beyond low Earth orbit
- Sustain a focused technology development program for next-generation space transportation capabilities that:
  - Dramatically improve the reliability, responsiveness, and cost of access to, transport through, and return from space
  - Enables a decision to acquire these capabilities in the future

Goals and Objectives (cont.)

- Encourage and facilitate the U.S. commercial space transportation industry to:
  - Enhance the achievement of national security and civil space transportation objectives
  - Benefit the U.S. economy
  - Increase the industry's international competitiveness
- Sustain and promote a domestic space transportation industrial base necessary to meet national security and civil requirements
  - Includes launch systems, infrastructure, and workforce

Implementation: Assuring Access to Space

- "Assured access" is a requirement for critical national security, homeland security, and civil missions
  - Defined as a sufficiently robust, responsive, and resilient capability to allow continued space operations, consistent with risk management and affordability
- Defense will be the launch agent for the national security sector; NASA will be the launch agent for the civil sector
- Evolved Expendable Launch Vehicle Program
  - For foreseeable future, EELV will be foundation for access to space for intermediate and larger payloads for national security and civil
    - New vehicles that demonstrate performance will be allowed to compete on a level playing field with EELV
  - Defense will maintain overall management responsibilities
    - Fund annual fixed costs for both launch services providers unless or until such time as the Secretary of Defense, following coordination with the Director of Central Intelligence and Administrator of NASA, certifies that a capability that reliably provides assured access can be maintained without two EELV providers
    - Not later than 2010, evaluate the long-term requirements, funding, and management responsibilities for EELV and infrastructure, including recommending a proportionate shift in funding responsibility between national security and civil users
    - Modifications will be funded by agency requiring them

Implementation: Assuring Access to Space (cont.)

- Operationally Responsive Space Access
  - Before 2010, the United States shall demonstrate an initial capability for operationally responsive access to and use of space to support national security requirements
- Federal Launch Bases and Ranges
  - Federal launch bases and ranges are vital components of infrastructure and are national assets
  - Defense and NASA will operate the Federal launch bases and ranges in a manner so as to accommodate users from all sectors
  - Look to transfer these capabilities to a predominantly space-based range architecture to accommodate, among others, operationally responsive space launch systems and new users

Implementation: Space Exploration

- Develop space transportation capabilities necessary to carry out space exploration consistent with the guidance in *U.S. Space Exploration Policy*, dated January 14, 2004
- NASA Administrator, in coordination with Secretary of Defense, to develop options to meet potential exploration-unique requirements for heavy lift
  - Emphasize the potential for using derivatives of the EELV
  - Evaluate the comparative costs and benefits of a new dedicated heavy-lift launch vehicle or options based on the Shuttle
  - Submit recommendations to the President regarding the preferred option to meet future heavy-lift requirements

Implementation: Transformation

- Sustain a focused technology development program for next-generation space transportation capabilities to transform U.S. access to and use of space
- SecDef and the NASA Administrator, in cooperation with industry as appropriate, shall:
  - Within two years, develop requirements, concept of operations, technology roadmaps, and investment strategy to:
    - Dramatically improve the reliability, responsiveness, and cost of Earth-to-orbit space transportation for deployment of spacecraft and other payloads in Earth orbit, exclusive of human space flight
  - Pursue R&D of in-space transportation capabilities, including:
    - Automated rendezvous and docking
    - The ability to deploy, service, and retrieve payloads in Earth orbit
    - Space nuclear technologies (in cooperation with the Secretary of Energy) to more quickly, affordably, and safely expand the reach of exploration into the solar system and beyond

Implementation: Commercial Space Transportation

- U.S. Government is committed to encouraging and facilitating a viable U.S. commercial space transportation industry that:
  - Supports U.S. space transportation goals
  - Benefits the U.S. economy
  - Is internationally competitive
- U.S. Government agencies shall:
  - Purchase commercially available U.S. space transportation products and services to the maximum extent possible, consistent with mission requirements and applicable law
  - Provide a timely and responsive regulatory environment for licensing commercial space launch and reentry activities
  - Maintain, subject to periodic review and the competitiveness of U.S. industry, the liability risk-sharing regime for U.S. commercial space transportation activities
  - Refrain from conducting activities with commercial applications that preclude, deter, or compete with U.S. commercial space transportation activities, unless required by national security

Implementation: Commercial Space Transportation (cont.)

- U.S. Government agencies shall (cont.):
  - Involve the U.S. private sector in the design and development of space transportation capabilities to meet U.S. Government needs
  - Provide stable and predictable access to the Federal space launch bases and ranges for commercial purposes on a direct-cost basis
    - U.S. Government reserves the right to use these facilities on a priority basis to meet national security and critical civil mission requirements
  - Encourage private sector, State, and local government investment and participation in the development and improvement of space infrastructure, including non-federal launch and reentry sites
  - Provide for the private sector retention of technical data rights in acquiring space transportation capabilities, limited only to the extent necessary to meet U.S. Government needs

Implementation: Commercial Space Transportation (cont.)

- Secretary of Transportation shall license and have safety oversight responsibility for commercial launch and reentry operations and operation of non-federal launch and reentry sites
- Secretaries of Transportation and Defense shall establish common launch safety requirements for launches from Federal and non-federal launch sites to create a stable and definitive safety framework for U.S. space launches
  - Coordinate these requirements with the NASA Administrator through established relationships
- Secretaries of Commerce and Transportation shall encourage, facilitate, and promote U.S. commercial space transportation activities, including commercial human space flight

Implementation: Industrial and Technology Base

- U.S. Government payloads will be launched on space launch vehicles manufactured in the United States, unless exempted by Director of OSTP, in consultation with National Security Advisor
  - Policy does not apply to use of foreign launch vehicles on a no-exchange-of-funds basis to support the following: flight of scientific instruments on foreign spacecraft, international scientific programs, or other cooperative government-to-government programs
  - Also does not apply to launch of U.S. Government secondary scientific payloads for which no U.S. launch service is available
  - Proposed use will be subject to interagency coordination
    - As early in the program as possible and prior to the sponsoring agency's request for authority to negotiate and conclude an agreement
    - Coordination will take into account national security and foreign policy concerns, civil and scientific interests, and the performance, availability, and economic and budgetary considerations

Implementation: Industrial and Technology Base (cont.)

- Use of foreign components or technologies, and the participation of foreign governments and entities, in current and future U.S. space transportation systems is permitted
  - Must be consistent with U.S. law and regulations, as well as nonproliferation, national security, and foreign policy goals and commitments and U.S. obligations under the Strategic Arms Reduction Treaty, Intermediate Nuclear Forces Treaty, and the Missile Technology Control Regime
  - Such use or participation will not be permitted where it could result in critical national security or civil space launches being jeopardized by delays or disruptions in receipt of foreign-produced systems, components, technology, or expertise

Implementation: Nonproliferation and Excess Missile Assets

- U.S. excess ballistic missile assets will either be retained for government use or destroyed
  - U.S. Government agencies may use such assets to launch payloads into orbit on a case-by-case basis, with SecDef approval
- U.S. Government encourages other nations that possess excess ballistic missile assets to limit use for government purposes only or destroy them
  - Consider on a case-by-case basis requests from U.S. companies to use foreign excess ballistic missiles for space launch
- U.S. Government will consider on a case-by-case basis requests to launch foreign space transportation systems in the U.S. for commercial purposes, including exhibitions and demonstrations

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Key Policy Changes

Policy		NSTC-4, 1994	New Policy, 2004
Scope		Strong focus on separate roles for DoD and NASA, reducing costs, and growth of commercial space	Greater focus on assured access, interagency collaboration, focused mission goals, transformation
Goals & Objectives		Balance efforts to sustain existing capabilities with development of new systems Maintain strong industrial base Promote reduction of costs Develop new RLVs to reduce costs Foster international competitiveness	Assured access to space Demonstrate operationally responsive access to space Support focused Exploration Vision Focused R&D on transformational capabilities Sustain strong industrial base Encourage commercial space
Key Areas	Assured Access, EELV, & ORS	DoD – manage ELV fleet to reduce costs for national security needs DoD – maintain Titan IV until replacement available NASA – maintain Shuttle and develop new RLV Operationally Responsive Access to Space – no mention	Assured access is requirement for critical national security, homeland security, and civil missions EELV fleet is primary lift for national security and civil: - Maintain two providers and fund annual fixed costs - Evaluate requirements, funding, and management not later than 2010 Retire Shuttle by 2010 DoD, demonstrate initial capability by 2010 – Develop plans to implement ORS
	Space Exploration	Focus on Shuttle and eventual RLV replacement to support LEO activities	Consistent with U.S. Space Exploration Policy: - Develop new capabilities for exploration beyond LEO - Recommend options to meet potential exploration-unique requirements for heavy lift

Key Policy Changes (cont.)

Policy		NSTC-4, 1994	New Policy, 2004
Key Areas	Future Technologies & Capabilities	Focus on next-gen RLVs and need to reduce cost of access to space NASA lead for RLV R&D DoD focus on ELV development	DoD & NASA, sustain focused S&T program to transform US access to space W/in 2 years, develop plans & roadmaps Pursue R&D on in-space capabilities
	Commercial Space & Industrial Base	Encourage viable US space industry USG payloads must use US-manufactured launch vehicles USG use commercial as much as possible US industry should be internationally competitive	Viable domestic base is foundational and critical to assuring access to space USG payloads must use US-manufactured launch vehicles Foreign components allowed, but not if jeopardize launches by delays or disruption
	Nonproliferation & Excess Ballistic Missiles	US assets for space launch allowed on limited basis, after USG approval Foreign assets not addressed	US assets for space launch allowed on limited basis, after USG approval Use of foreign assets for launch of U.S. commercial spacecraft must be approved by USG Case-by-case approval for launch of foreign launch vehicles in U.S for commercial purposes, including exhibitions and demonstrations